REMARKS

By this amendment, claims 1-10 remain pending in this application. Claims 1 and 3 have been amended. No new matter has been added. Applicants respectfully request reconsideration in view of the above amendments and the following remarks.

Claim 3 is rejected under 35 U.S.C. 112, second paragraph, for lacking antecedent basis for "the phthalate salt." Applicants have amended claim 3 to cure the noted deficiency and respectfully submit that the rejection is now overcome and request the Examiner for withdrawal of the same.

Claims 1, 2, 4-7 and 9-10 are rejected under 35 U.S.C. §102(a) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over Nishimoto et al. (U.S. Pat. Pub. No. 2004/0132305). Claims 3 and 8 are rejected under 35 U.S.C. §103(a) as being obvious over Nishimoto. Claims 1-8 are rejected under 35 U.S.C. §103(a) as being obvious over Shemo et al. (U.S. Pat. No. 6,258,140) alone or in view of Uchida et al. (EP 1223609). Claims 1-8 are rejected under 35 U.S.C. §103(a) as being obvious over Streinz et al. (U.S. Pat. No. 5,993,686) in view of Shemo et al. (U.S. Pat. No. 6,258,140) and Uchida et al. (EP 1223609). Applicants respectfully disagree.

The composition of claim 1 requires, an aqueous composition useful for polishing silica and silicon nitride on a semiconductor. In other words, the composition of claim 1 is for polishing silica and silicon nitride in shallow trench isolation ("STI") processes. As discussed in the Applicant's specification on page 1, in the STI technique, the first step is the formation of a plurality of trenches at predefined locations in the substrate, usually by anisotropic etching. Next, silica is deposited into each of these trenches. The silica is then polished by chemical mechanical polishing, down to the silicon nitride (stop layer) to form the STI structure. To achieve efficient polishing, the polishing slurry must provide a high selectivity involving the removal rate of silica relative to silicon nitride ("selectivity").

The composition and method of the present invention provide unexpected selectivity for removing silica relative to silicon nitride. The composition advantageously relies upon a chelating agent or a selectivity enhancer to selectively polish silica relative to silicon nitride for shallow trench isolation processes. In particular, the composition comprises a quaternary ammonium compound to selectively polish silica relative to silicon nitride, at the pH of the application. For example, as illustrated in Table 2 of the Applicant's specification, the increased concentration of tetramethyl ammonium hydroxide provided improved selectivity values. In particular, Test 2 provided a selectivity of 62 compared to 25 for Test B. The selectivity was markedly improved from that of Test B, which did not contain any tetramethyl ammonium hydroxide.

In contrast to the invention of claim 1, the cited references have nothing to do with a slurry for chemical mechanical polishing during STI processes. In other words, the cited references have nothing to do with polishing silica relative to silicon nitride. For example, Nishimoto et al. concerns an aqueous dispersion for use in polishing polysilicon film (see e.g., paragraphs [0224] to [0242], Examples 1A to 1I, Comparative Examples 1a to 1e and Tables 5 and 6). Shemo et al. concerns a composition for polishing a memory hard disk (see e.g., Abstract and columns 1-4). Further, Uchida et al. concerns an abrasive-free composition for polishing bulk copper (see e.g., paragraphs [0012] to [0035]. Finally, the slurry of Streinz et al. concerns a slurry for use in polishing titanium and tungsten (see e.g., line 51, column 2 to line 17, column 3). All of the cited references are completely void of any discussion relating to a composition for use in polishing silica and silicon nitride during STI processes.

Apparently, the Examiner believes that a slurry for one application can simply be applied or "dropped-in" to another application. To that end, the Applicants strongly assert that there is no motivation for utilizing any of the above-mentioned slurries for use in STI processes. In fact,

due to the specific requirements and characteristics of each application (e.g., polishing copper, polysilicon, hard disk, etc.), it is extremely unlikely that a slurry for one application would be appropriate for another application. For example, the aqueous dispersion of Nishimoto must have a pH range of 7 to 13, more preferably 9 to 12, in order to provide sufficient polishing performance for the polysilicon film (see e.g., paragraph [0106]), while the present invention has an acidic pH. In other words, no one of common skill in the art would simply substitute a, for example, slurry for copper for polishing (nickel) hard disk. Accordingly, Applicants submit that the rejection of claim 1 is overcome and respectfully request the Examiner for withdrawal of the same.

Similarly, claim 8 is directed to a composition for polishing silica and silicon nitride on a semiconductor wafer. Also, claim 9 is directed to a method for polishing silica and silicon nitride on a semiconductor wafer. Accordingly, claims 8 and 9 should be allowable for at least the reasons as stated above for claim 1. In addition, claims 2-7 and 10 depend from claims 1 and 9, respectively, and should be allowable along with claims 1 and 9 and for its own unique combination of features that are neither taught or suggested by the cited prior art.

In view of the foregoing, Applicants submit that all of the currently pending claims are now in immediate condition for allowance and respectfully request the Examiner to withdraw the outstanding rejections of the claims and to pass the current application to issue. If the Examiner

has any questions or comments, the Examiner is cordially invited to directly contact the below-listed attorney.

Respectfully submitted,

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Date

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